

**ABSTRACT**

Electrode membrane combinations for use in biosensors to detect analytes in a sample and methods for making and storing same are disclosed. In one aspect, a method is provided for producing a first layer electrode membrane comprising:-

- (1) Forming a solution containing Linker Lipid A, the disulfide of mercaptoacetic acid (MAAD) or similar molecule, linker Gramicidin B, membrane spanning lipid C (MSL-C) and membrane spanning lipid D (MSL-D) or other suitable linker molecules and other ion channel combinations;
- (2) Contacting an electrode containing a clean gold surface with the solution, the disulfide containing components in the solution thus adsorbing onto the gold surface of the electrode;
- (3) Rinsing the electrode with a suitable organic solvent; and
- (4) Removing the excess organic solvent used for rinsing.